

IBM EXAMINATION CENTRE MANAGEMENT SYSTEM

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COMPUTER SCIENCE

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## **EXECUTIVE SUMMARY**

Registration process can become a complicated and tedious phase if it is being handled without a good and effective management system. The purpose of this project is to make sure the downside of registration process become more straightforward and efficient. This project not only allows registrant to register for the exam at ease but it also permits admin staff to manage the exam center proficiently. Lacking of a good computerize management system results in admin, devoted more time and energy in managing the exam center. With this intention, a computer system that can cater all of this purpose is very important.

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## **PART 1**

### **1.1 Introduction**

IBM Centre of Excellence (IBM CoE) was established after an MOU between IBM, HeiTechPaduBerhad and University Malaysia Pahang (UMP) on 27 May 2010. The smart collaboration between these organizations initially aimed to provide a platform to produce graduates that have necessary skills to work in organizations that used IBM and its related products. Professional certificate Exam centre is one of the services of IBM centre of excellence.

The main focus of this project is on the Exam Center managed by IBM center of excellence (UMP). Generally, IBM Examination Centre Management System provides a one stop center for admin to handle the registration process of professional certification exam offered to student or anyone who had attended the IBM training classes. Other than handling registration process of certification exam, the system also allow admin to update necessary information that is related to the exam center such is list of exam offered, exam schedule, payment info and etc. Additionally, this system also permits students or potential students to get information on the status of their exam registration. Other than that, student also can plan their exam ahead as they can get all the information regarding exam schedule, time and venue before they make a registration. On top of that, payment and exam result also all can be done through this system

### **1.1.1 Problem statement**

Currently, there is no system for admin of IBM Professional Certificate exam centre as well as students where admin can manage all information related to exam. Students find it very difficult to get relevant information about the exam. As for the registration process, it is also very troublesome as the students need to take the forms from faculty and fill them up to register for their tests. The payment process is done in manual procedures. After students undergo all of these processes, admin need to spend some time to arrange the forms submitted and key in all the information for recording purpose. This becomes the major difficulty for admin because it is very time consuming for them to handle the process of registration, payment and personal details of the participants who register under IBM Exam Center UMP.

### **1.1.2 Objective**

The Objective of this project is to help admin of IBM Centre of Excellence University Malaysia Pahang to well manage the professional certificate exam center at UMP. This project assists the admin team to handle the process of registration, payment and personal details of the participants who register under IBM Exam Center UMP. Basically, the main objectives of this system are as follow:

- a) To systematize the process of exam registration done by students
- b) To provide a one-stop center for admin as well as student where admin can manage all information related to exam while student can get all the information regarding exam, payment and exam results.

### **1.2.1 Current System at IBM Center of Excellence UMP**

Currently, there are not many system available in managing the exam center and at present most of the processes are done manually. First of all, the administrator of Professional Certificate exam centre will post all the information of the exams offered by IBM Centre of Excellence such as, lists of exam offered, exam schedules, payment info and so on in the UMP portal. After that, the admin will prepare the registration forms to students. If the students want to take the exam, they will need to fill in the forms and send them back to the admin, and subsequently the admin need to key in all the information into the computer by using Microsoft Word for recording purpose. Thereafter, the staffs need to use Microsoft Excel to arrange the schedules of exam accordingly. Next, the payment process also is done manually, whereby all the registrants need to pay in cash. Finally, all the information will be updated to the students through UMP portal.

### **1.2.2 Existing System on Online Exam Registration**

#### **Prometric**

Prometric is a U.S. company involves in a test administration industry. Prometric operates a test center network consist of over 10,000 sites in 160 countries. Prometric sells a wide range of services, including test development, test delivery, and data management capabilities. Prometric delivers and administers tests of approximately 500 clients in the academic, professional, government, corporate and information technology markets. They securely deliver an average of 10 million exams per year to people who are seeking to improve their lives. Whether by starting a new career, further developing their skills to improve on an existing one, adding to their qualifications for a promotion, taking school entrance exams or simply for professional development, people taking tests want a reliable, convenient and hassle-free experience. Prometric ensure that people legitimately earn the credentials they seek to achieve and in the same time guarantee a fair testing experience.



**Pearson VUE**

Pearson VUE provides a full suite of services from test development to data management, and provides exam test centers, distributed in over 175 countries and regions by the world's most comprehensive and most secure network. Pearson VUE is the electronic testing company owned by the global media company Pearson Group. E. Clarke Porter Virtual University Enterprises, the company was founded in 1994, currently has more than 5,000 authorized test centers in 165 countries. Pearson VUE provides testing services across multiple industries, from academic employment, government, such as the UK driving theory test, Driving Standards Agency and GMAT official testing agency, the Cisco Career Certifications, the NCLEX, Oracle Corporation, CompTIA, the Zend Certified Engineer exam. The company offers a lot of license, certification, academic admissions, regulatory, and government testing service markets, for customers worldwide. Pearson Professional Centers is designed for a high-risk control test with consistent test environment.

**ISACA**

ISACA is a nonprofit global membership association of IT and information systems professional, committed to providing the different constituencies tools to more than 10 million people around the world, helping them to achieve personal and organizational success. The establishment of more than 190 chapters in more than 75 countries and regions around the world, ISACA provides its members with education, resource sharing, advocacy, professional networking, as well as many other interests at the local level. They also provide exam center on their system to let their member to register for the certification exams.

### 1.3 Existing System Function and Its Limitation

Function/details	Prometric	Person vue	ISACA
User can check schedule online	User need to follow the steps only can view the schedule.	After log in use can select the exam they want to register , after that they only can view the exam schedule	After log in use can select the exam they want to register , after that they only can view the exam schedule
Exam registration	After log in only can register for the exam	After log in only can register for the exam	After log in only can register for the exam
Online payment for the exam	User can pay with their credit card.	-	User can pay with bank transfer
Search of exam location	-	Can search location by using country name and city name	-

Table 1.3: function and limitation of existing systems

Prometric, Personvue and ISACA also three have function such as check schedule online and exam registration. For Prometric system, the user need to follow some of the steps provided in order to check the exam date and time ,unfortunately this step by step process is quite troublesome and resulting in user quit halfway before they even manage to register on any test or exam. For both Person Vue and ISACA, user must first register and the sign-in, in order to view the exam date and time. If the user does not sign in they cannot do any things. Prometric and ISACA does not provide function for searching exam location, hence the user need to choose their location during the registration stage. Prometric, Person Vue and ISACA all three systems does not have any feature that can educate every user on how to use the system they provide. This circumstance will cause users, especially the first timer or user who have low level or IT knowledge become lost and confuse while trying to navigate and use the systems

### 1.4 Method of approach

The software development methodology of this project is Rapid application development (R.A.D).

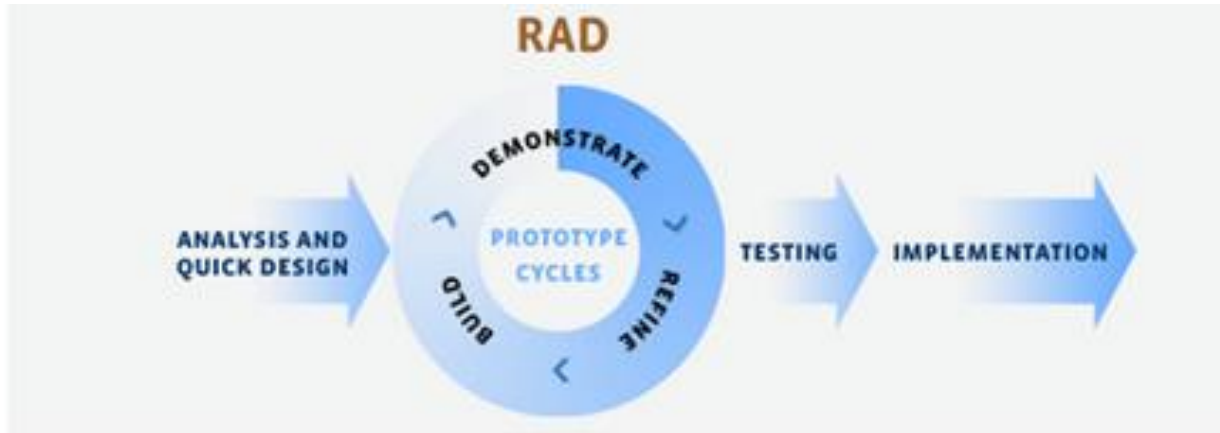


Figure 1: the process of RAD

Rapid application development (R.A.D) compressing the analysis, design, build and test phases into a series of short, iterative development cycles. This method can let software to be written much faster, and makes it easier to change requirements. By using this method it can reduce the time of development.

### 1.5 Project Scope

This project is developed by using web based and the main function of this system is included:

- Exam registration
- Check schedule online
- Online payment

The user of this system:

- IBM Exam centre admin
- Exam registrant
- Trainer

The uses of software:

- Adobe Dreamweaver CS5
- MySQL Database
- PHP languages

The uses of hardware:

- Laptop

### **1.6 Project Limitation**

The limitation of this project is this system is not a mobile-friendly version thus; it can only be access by using computer or laptop. Owing to the fact that, the screen of mobile devices is quite small compare to PC, therefore only little space is available to display the complete version of the whole website. In order to overcome this limitation, the need to create a mobile-friendly version of the website which can be access anytime anywhere perhaps can be materialized in the near future. However, at present this project will not touch on this part because to create another version of a mobile-friendly version, we need to reduce the amount of content of this system. Other than that, we also need to reduce the text entry and the display and navigation problem need to be resolve beforehand. Considering that not all contents of the system can be fit on the version of mobile-friendly version, therefore it needs to reduce the contents and only keep the important contents. Inserting text into the mobile-friendly system also is a bit complicated and tedious compare to PC so the mobile-friendly version need to reduce the text insert by user. For the display purpose, the mobile devices are much more different compare to PC, it needs to cater for different type of device that consists of different size of display screen in order to make user easy able to view and navigate the systems, hence more research and studies need to be done on this part

Due to the all problems mentioned earlier in this chapter, hence at present this project did not touch on the part on mobile-friendly version but in the near future this system will be enhanced by some future work so that it can be compatible with mobile device

## **PART 2**

### **2.0 Report Body**

#### **2.1 User Requirement**

To acquire user requirements I need to interview my client. Before I meet my client I need to take the permission letter as shown in figure 2 below, this letter is given by Faculty of Computer Systems & Software Engineering University Malaysia Pahang in order to give permission to student to meet with their client. The purpose of the letter is to prove to client that I am a student of Faculty of Computer Systems & Software Engineering University Malaysia Pahang and thanked the co-operation with UMP.

The date of interview was on 23th November 2012 and the time of interview was at 11.am at client office. The content discussed basically covers the functions of the system and the task that should be included in the system. Figure 3 show the user requirement form that was used to record entire requirements request by client while meeting with them. This form was filled after the interview.



Fakulti Sistem Komputer  
& Kejuruteraan Perisian  
Faculty of Computer Systems  
& Software Engineering



RUJ. KAMI (OUR REF) :  
RUJ. TUAN (YOUR REF) :

UMP.12.02/13.11/01/07 ( 22 )

20 November 2012

#### KEPADA SESIAPA YANG BERKENAAN

Tuan/Puan,

**TAJUK** : IBM EXAMINATION CENTRE MANAGEMENT SYSTEM

**NAMA PELAJAR** : LEONG WEI THENG

**KAD PENGENALAN** : 900908-07-5138

**TAHUN/PROGRAM** : 3/IJAZAH SARJANA MUDA SAINS KOMPUTER (KEJURUTERAAN PERISIAN) DENGAN KEPUJIAN

Adalah dengan hormatnya dimaklumkan bahawa pelajar di atas ialah pelajar berdaftar Fakulti Sistem Komputer & Kejuruteraan Perisian, Universiti Malaysia Pahang.

2. Sukacita kiranya pihak tuan/puan dapat memberikan kebenaran bertulis serta data dan maklumat yang berkaitan untuk pelajar menyiapkan projek berkenaan. Untuk makluman tuan/puan, projek ini ialah satu keperluan bagi kandungan kursus berkaitan.

Sekian, segala kerjasama dan perhatian tuan/puan didahului dengan ucapan ribuan terima kasih.

**"BERKHIDMAT UNTUK NEGARA"**

Saya yang menjalankan tugas,

(DR. ADZHAR KAMALUDIN)  
Timbalan Dekan (Akademik & Hal Ehwal Pembangunan Pelajar)  
Fakulti Sistem Komputer & Kejuruteraan Perisian  
Universiti Malaysia Pahang  
☎ 609-5492467/2147  
☎ 609-5492144  
Eastma12

Figure2: Permission letter

## PSM Project meetings form

Project title :	IBM EXAMINATION CENTRE MANAGEMENT SYSTEM		
Supervisor :	NURZETI AQ TAR BINTI AHMAD AZUAN		
Meeting No :	1		
Participants :	LEONG WEI THENG		
Date :	23/11/12	Time:	11.00am
Place :	Client Office		
Issues discussed :			
<p>IBM CB needs to have a system that can assist in storing information on its Professional Certificate Examination Centre. The system should be able to do these tasks :</p> <ol style="list-style-type: none"> <li>1. Input and retrieval of all the examinations at the centre</li> <li>2. Input and retrieval of the examination candidates for each examination held at the centre.</li> <li>3. Input and retrieval of examination results for all candidates.</li> <li>4. Attendance sub-system during each examination at the centre.</li> <li>5. Potential candidates can register for the examination through the system.</li> <li>6. The administrator can provide listing of candidates for each examination.</li> <li>7. The system can provide reports for each examination, annual reports on examinations held, statistics of candidates taking exam, pass fail statistics and candidates profiles</li> </ol>			

Client signature



Student signature

Figure 3: User requirement form

## 2.2 Software Requirement Specification (SRS)

### 2.2.1 Definition, acronyms, and abbreviation

There are some of technical terms that being used in the documents as shown below:

Database	A modern relational database used for storing data
Users	Those who use the Human Resources Management system.
Use Case	Outwardly visible and testable system behavior
Use Case Diagram	Is a visual representation of actors and use cases together with any additional definitions and specifications
Activity Diagram	Graphically represent the flow of events of a use case and shows transitions between actions
Sequence Diagram	Captures interactions between objects needed to execute a use case or part of it and shows the sequencing of events (messages) between collaborating objects

There are some of acronyms that being used in the documents as shown below:

IBM CoE	IBM Centre of Excellence
IBM ECMS	IBM Examination Centre Management System
IBM EC	IBM Examination Centre
UMP	University Malaysia Pahang
SRS	Software Requirement Specification
SDD	Software Design Documentation
RAM	Random-access memory
PC	Personal computer



SDLC	Software Development Life Cycle
RAD	Rapid Application Development

### 2.2.2 References for SRS

1. IEEE Recommended Practice for Software Requirements Specifications  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp&arnumber=720574&userType=inst>
2. Software Requirement Specifications (SRS)  
<http://learn.mq.edu.au/webct/RelativeResourceManager/21891580001/Public%20Files/SRS.pdf>

### 2.2.3 Overall description

This section describes the general factors that affect the product and its requirements.

### 2.2.4 User interfaces

The table 2.2.4 shows the user interfaces and descriptions for IBM ECMS.

User Interface	Function
Maintaining Exam Schedule Screen	Admin can insert, update and delete the exam name, date, time and venue at this interface for user to review.
Maintaining Exams information Screen	Admin can insert, update and delete the exam information at this interface for user to review.
Register Exam Screen	Registered user can register exam at this interface.
Update exam payment list Screen	Admin can view all the exam participant and if the participant already pay for the exam, admin can take record and send the message to user that the payment already received at this screen.
Key in Attendance Screen	Trainer can insert, update and delete the exam attendance at this interface.
Key in Result Screen	Trainer can insert, update and delete the exam result, and send the result to exam registrant at this interface.

Table 2.2.4: User interfaces and descriptions for IBM ECMS.

### 2.2.5 Hardware interfaces

Table 2. 2.5 shows the hardware interfaces and descriptions for IBM ECMS.

Hardware Interface	Function
Laptop	Develop the system and for documentation purpose

Table 2.2.5: Hardware interfaces and descriptions for IBM ECMS

### 2. 2.6 Software interfaces

Table 2.2.6 shows the software interfaces and descriptions for IBM ECMS.

Software Interface	Function
Adobe Dreamweaver CS5	Development of functionality, applications and GUI of the system
MySQL Database	Database design and implementation
PHP languages	Programming languages of the system.

Table 2.2.6: Software interfaces and descriptions for IBM ECMS

### 2.2.7 Product Functions

This section provides a summary of the major functions that the software will perform. The figure 2.2.7.1 shows the use case diagram for IBM ECMS.

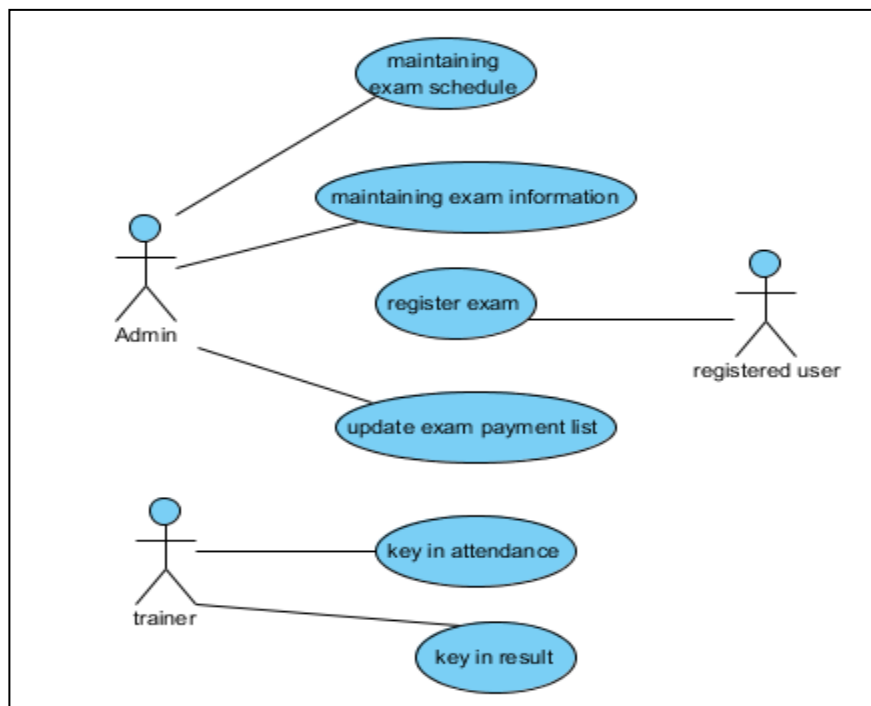


Figure 2.2.7.1: Use case diagram for IBM ECMS

Table 2.2.7.2 shows the functions for each use case for IBM ECMS.

Use case	Function
Maintaining Exam Schedule	Admin will insert, update and delete the exam name, date, time and venue .
Maintaining Exams information	Admin will insert, update and delete the exam information .
Register Exam	Registered user will register exam and save the information to the database.
Update exam payment list	Admin will view all the exam participant and if the participant already pay for the exam, admin can take record and send the message to user that the payment already received.
Key in Attendance	Trainer will insert exam attendance.
Key in Result	Trainer will insert exam result, and send the result to exam registrant.

Table 2.2.7.2: The functions for each use case for IBM ECMS.

### 2.2.8 User Characteristics

The general characteristics of the intended users for our system are listed as below:

1. Every user should be comfortable of working with computer and web browsing.
2. User must have basic knowledge of English too. Our system default language is English.
3. User knows knowledge about task to do with the system.
4. User should have existing skills like using keyboard and mouse

### 2.2.9 Constraints

The constraints for our system are listed as below:

1. GUI is only in English.
2. Login and password is used for identification user.
3. Poor knowledge of computers: level of guidance provided.
4. Experience of other similar systems: user expectations and use of familiar interface conventions.
5. Poor general abilities, e.g. Literacy, vision: assumptions made about presentation of text, motor skills, and intelligence.

6. Poor existing skills (keyboard, mouse): choice of interaction style to use to exploit existing skills considerations.
7. User lack patience.
8. Have high expectations of performance.
9. Intolerant of software errors.

### **2.2.10 Assumptions and Dependencies**

The factors that affect the requirements being changed to the users are listed as below:

1. The end user should have a basic knowledge of English and computer usage
2. Application are already created and information's available for use.
3. Administrator is already created.

### **2. 2.11 Specific Requirements**

#### **2.2.12 External Interface Requirements**

##### **2.2.12.1 User Interfaces**


The table 2.2.12.1 shows the user and user interfaces when access to IBM ECMS.

User interface	User
Maintaining Exam Schedule Screen	Admin
Maintaining Exams information Screen	Admin
Register Exam Screen	Registered user
Update exam payment list Screen	Admin
Key in Attendance Screen	Admin
Key in Result Screen	Admin

Table 2.2.12.1: The user and the user interfaces when access to IBM ECMS.

### 2.2.12.2 Hardware Interface

The hardware interface I using is laptop. The table below shows the hardware interface and its specification for IBM ECMS.

Laptop- Lenovo i3	
	
References: <a href="http://notebook.mynoxil.com/notebook_1996_ver_Lenovo_G460-i3_350M+G310M+500GB.html">http://notebook.mynoxil.com/notebook_1996_ver_Lenovo_G460-i3_350M+G310M+500GB.html</a>	
Processor	Intel Core i3-350M (2.26GHz, 3MB L2 cache)
RAM	2 GB DDR3
Hard Disk	500 G 5400 RPM
Graphic Chip	nVidia GeForce 310 M (512MB)

### 2.2.12.3 Software Interfaces

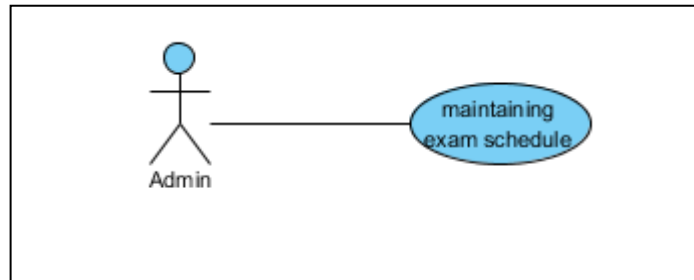
The table 2.2.12.3 shows software interfaces and its specification for IBM ECMS. The function of the software interfaces can refer to section 2.2.12.3 (table 2.2.12.3)

Software Interface	Source
Adobe Dreamweaver CS5	<a href="http://download.cnet.com/Adobe-Dreamweaver-CS5-5/3000-10247_4-10013427.html">http://download.cnet.com/Adobe-Dreamweaver-CS5-5/3000-10247_4-10013427.html</a>
MySQL Database	<a href="http://download.cnet.com/XAMPP/3000-10248_4-10703782.html">http://download.cnet.com/XAMPP/3000-10248_4-10703782.html</a>
PHP languages	<a href="http://www.zend.com/en/community/downloads">http://www.zend.com/en/community/downloads</a>

Table 2.2.12.3: Software interfaces and its specification for IBM ECMS

## 2.2.13 System Features

### 2.2.13.1 System Feature 1



Use Case Diagram: Maintaining Exam Schedule

#### Introduction/Purpose of Feature

The “Maintaining Exam Schedule” is one of the functions for our system which is known as IBM ECMS. The purpose of this feature is for admin to insert, update or delete the exam name, date, time and venue for user to view.

#### Stimulus/Response Sequence

In this section, I will describe about the stimulus and response sequence of “Maintaining Exam Schedule” function in the system. The admin is the person who in charge of insert, update or delete the exam name, date, time and venue. The stimulus for this function is the exam name, date, time and venue.

#### Use Case Description

The table below shows the use case description of Maintaining Exam Schedule:

Use Case:	Maintaining Exam Schedule
ID:	UC001
Scope:	insert, update or delete the exam name, date, time and venue
Priority:	insert, update or delete the exam name, date, time and venue for registered user and public view.
Summary:	The admin insert, update or delete the exam name, date, time and venue by

	using this system.
Primary Actor:	Admin
Supporting Actors:	None
Stakeholders:	admin, registered user and public
Generalization:	None
Include:	None
Extend:	None
Precondition:	None
Trigger:	Admin wants to insert, update or delete the exam name, date, time and venue.
Normal Flow:	<ol style="list-style-type: none"> <li>1. Admin login to the system.</li> <li>2. Admin clicks on “new”, “edit”, or “delete”.</li> <li>3. Admin enters the data exam name, date, time and venue.</li> <li>4. Exam schedule system save and check entered data.</li> <li>5. Save data to database.</li> <li>6. Show the new data on exam schedule table.</li> </ol>
Sub-Flows:	None
Alternate Flow/ Exceptions:	<ol style="list-style-type: none"> <li>1.a Admin can go to home page to log in to the system</li> <li>3.a. If admin click on “edit”, admin update the data exam name, date, time and venue.</li> <li>3 .b. If admin click on ”delete” the data exam name, date, time and venue will be delete.</li> </ol>

	5.a.If the data got error, admin need to key in again.
Post-Condition:	None
Non-Behavioral Requirements:	None
Open Issues:	None
Source:	Requirement collection